A 364

ASTRONOMICAL OBSERVATIONS

MADE,

By Order of the Royal Society,

AT

PRINCE OF WALES'S FORT,

On the North-West Coast of HUDSON'S BAY.

By WILLIAM WALES and JOSEPH DYMOND.

Communicated to the ROYAL SOCIETY, November 16, 1769.

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MDCCLXX.

RPJCB

Aſtronomical Obſervations made by Order of the Royal Society, *at* Prince of Wales's Fort, *on the North-Weſt Coaſt of* Hudſon's Bay. *By* William Wales *and* Joſeph Dymond.

Mem. The Thermometer marked A was hung within the ſouthern, or lower Obſervatory; in ſuch a Part as we judged would be leaſt affected by the Fire; cloſe to, and with its Ball exactly of the ſame Height with, the Quickſilver in the Baſon of the Barometer: That marked B was hung without Doors, on the north Side of the Obſervatory.

The Floor of the Obſervatory might be above 50 Feet above the Level of the Sea at Low-water Mark.

1768	Equal altitudes. Times by the clock.									Zenith diſtance	Barometer.	Thermometers.		Phænomena and Circumſtances.	
Septemb.	Lower Wire		Middle Wire			Upper Wire		Paſſed the Meridian.			Inches	A	B	Obſerver	
	′	″	h	′	″	′	″	h	′	″	° ′				
☿ 14	17	15	19	20	54	24	33	23	49	18½	75 40	29,56	38½	38	W. ⊙'s U. L. ⊙'s L. L. easterly
	21	37		25	16	28	55								
♃ 15	15	59	4	12	18	8	37				75 40	29,61	46	42½	W. ⊙'s L. L. ⊙'s U. L. westerly
	20	24		16	44	13	5								D.
☉ 18	At noon wound up the clock.														
☽ 19	14	54	19	18	36	22	10	23	54	7	78 13	29,97	37	34	D. ⊙'s U. L. ⊙'s L. L.
	19	15		22	56	26	37								
	33	8		36	55	40	39				76 0	29,98	37	34	D. ⊙'s U. L. ⊙'s L. L. easterly
	37	37		41	25	45	11								
♂ 20	9	36	4			2	7				76 0	30,07	49	44	D. ⊙'s L. L. ⊙'s U. L.
	14	3	4	10	19	6	32	23	55	00,-					
	28	1		24	16	20	37				78 13	30,07	49	44	D. ⊙'s L. L. ⊙'s U. L westerly
	32	19				25	1								
	36	56	19	40	44						76 0	30,06	38½	39	D. ⊙'s U. L. ⊙'s L. L. easterly
	41	26													
☿ 21											76 0	30,10	56	56	D. ⊙'s L. L. ⊙'s U. L. westerly
	4	33	4			12	3	23	55	57,-					
	15	47	19	19	30	23	11				79 0	29,97	45	44	D. ⊙'s U. L. ⊙'s L. L.
	20	13	19			27	27								
	40	42	19	44	34	48	22				76 0	29,96	46	45	D. ⊙'s U. L. ⊙'s L. L. easterly
	45	16		49	7	52	54								
	0	47	20	4	44	8	41				73 40	29,95	47	47	D. ⊙'s U. L. ⊙'s L. L.
	5	27		9	28	13	25								
♃ 22	45	26	3			37	27				73 40	29,89	62	65	D. ⊙'s L. L. ⊙'s U. L.
	50	8		46	9	42	9								
	5	38	4	1	42	58	3				76 0	29,89	62½	65	D. ⊙'s L. L. ⊙'s U. L. westerly
	10	2		6	18	2	32								
	30	36		26	52	23	5				79 0	29,89	63	65	D. ⊙'s L. L. ⊙'s U. L.
	34	57		31	18	26	37								

♂ Sept. 27 From the preceding obſervations, I have found that the clock is gaining 1′ 18″ per day on mean ſolar time, and in conſequence of that is now about 10′ 9″ too faſt: therefore at 20ʰ we ſtopped it, altered the pendulum to make it go ſlower, and ſet it to nearly mean time, W. W.

1768		Equal altitudes. Times by the clock.						Zenith diſtance		Barometer.	Thermometers.		Phænomena and Circumſtances.		
September		Lower Wire.		Middle Wire		Upper Wire		Paſſed the Meridian.							
		′	″	h ′	″	′	″	h ′	″	°	′	Inches.	A	B	Obſerver.	
☿	28	38	24	20 42	54	47	22	23 52	16½	71	40	29,96	43½	44	W.	⊙'s U. L. ⊙'s L. L. easterly
		43	46		48	20	42	55								
♃	29	59	50	2 55	15	50	43			71	40	29,98	56	55	W.	⊙'s L. L. ⊙'s U. L. westerly
		5	14	3 0	43	56	17									
♀	30	47	22	19 51	18	55	15	23 53	13½	78	0	29,82	36	35	W.	⊙'s U. L. ⊙'s L. L. ⊙'s U. L. ⊙'s L. L. easterly
		52	7		56	4	0	1								
		8	6	20 12	18					76	0					
		13	6		17	17	21	27								
♄	Oct. 1			3		40	24	23 53	46¼	76	0	29,72	49½	50½	W.	⊙'s L. L. ⊙'s U. L. ⊙'s L. L. ⊙'s L. L. ⊙'s U. L. westerly
		53	19	3 49	21	45	25			78	0					
		58	4		54	9	50	14								
		42	9	19 46	5	50	0			79	0	29,34	41	41	D.	⊙'s U. L. ⊙'s L. L. easterly
		46	52		50	49	54	44								
		59	46	20 3	50	7	52			77	0	29,33	41½	41	D.	⊙'s U. L. ⊙'s L. L. easterly
		4	36		8	43	12	45								
⊙	2	At noon wound up the clock.													D.	
		41	57	3 37	52	33	49			77	0	29,18	50	50½	D.	⊙'s L. L. ⊙'s U. L. westerly
		46	48		42	44	38	43								
					55	42	51	47		79	0	29,18	50	51½	D.	⊙'s L. L. ⊙'s U. L. westerly
		4	20	4 0	26	56	33									
⊙	9	At noon wound up the clock.													W.	
♃	13	32	35	20 37	5					78	20	29,86	28	26	W.	⊙'s U. L. ⊙'s L. L. easterly
		37	54			46	55									
		52	49	20 57	38					76	20	29,87	29	26½	W.	⊙'s U. L. ⊙'s L. L. easterly
		58	32	21 3	26											
☿	14	2	18	2 57	26			0 0	53¼	76	20	29,90	41	37	W.	⊙'s L. L. ⊙'s U. L. ⊙'s L. L. ⊙'s U. L. westerly
		8	2	3 3	15											
		22	54	18	21	13	54			78	20					
		28	14	23	47	19	21									
⊙	16	At noon wound up the clock.													D.	
		37	54	20 42	28	46	59			79	0	30,19	21	20	D.	⊙'s U. L. ⊙'s L. L. easterly
		43	24	47	57	52	30									
☽	17			3 16	58	12	20	0 2	55,–	79	0	30,20	31	28½	D.	⊙'s L. L. ⊙'s U. L. westerly
		27	2			17	57									
⊙	23	At noon wound up the clock.													W.	
♂	25	Stopped the Clock 24′ 11″ and ſcrewed down the ball of the pendulum ¾ of a turn, W. W.														
		39	31	20 44	28	49	30	23 44	47½	80	0	29,78	15	8	W.	⊙'s U. L. ⊙'s L. L. easterly
		45	28		50	24	55	44								
		2	23	21 7	53:	13	32			78	0	29,77	15	7½	W.	⊙'s U. L. ⊙'s L. L. easterly
		9	0		14	43	20	28								

1768	Equal altitudes. Times by the clock.						Zenith distance	Barometer.	Thermometers.		Phænomena and Circumstances.
October.	Lower Wire.	Middle Wire		Upper Wire	Passed the Meridian			Inches	A	B	Observer.
	′ ″	h ′ ″		′ ″	h ′ ″		° ′				
☿ 26	19 48	2 14 6					78 0	29,64	19	15	W. ⊙'s L. L. ⊙'s U. L. westerly
	26 22:	20 53		15 20::							
	43 15	2 38 9		33 0:			80 0	29,63	18½	14½	W. ⊙'s L. L. ⊙'s U. L. very hazy
	49 12	44 14		39 12							
⊙ Nov. 6	57 45	8 1 15		4 42	13 19 27¼		71 0	29,63	3	— 4½	W. Aldebaran easterly
	8 2	11 32		14 59			69 40				
		18 27 21		30 51			69 40	29,56	— 3	—11	W. Aldebaran westerly
	34 14	37 42		41 10			71 0				
☿ 16	37 55	8 41 35		45 12	12 44 3¾		61 20	29,60	+ 9	— 3	D. Aldebaran easterly
	56 56	9 0 40		4 21			59 0				
	31 10	16 27 28		23 45			59 0	29,60	+ 1	— 8	D. Aldebaran westerly
	50 14	46 32					61 20				
♃ 17	24 1	7 27 27		30 56	12 40 34″,-		70 20				
	36 53	40 23:		43 52			68 40	29,73	— 1	— 9	D. Aldebaran easterly
		53 15		56 46			67 0				
	31 21	17 27 50		24 24			67 0				
	44 15:	17 40 44		37 17			68 40	29,83	— 7	—12	D. Aldebaran westerly
	57 7	53 40:		50 13:			70 20				
♀ 18	1 52:	8 5 27		8 56	12 37 1,7		65 0	29,88		—14	D. Aldeb. easterly, hazy
	12 11	17 8 38		5 6			65 0	29,90	— 3	—15	D. Aldebaran westerly
♄ 19	2 9	9 6 17		10 43			57 0	29,85	— 9	— 6	D. Aldebaran easterly
	17 31	21 30		25 27			55 20				D. Ditto Ditto
⊙ 27	At noon I went to wind up the clock, but found it had stopped at 6h 48′. I suppose it had bee stopped by the cold last night, and therefore I kindled a fire to warm it before it was set a going. At abou 6h 58′ by the alarm set the regulator a going and wound it up. J. D.										
♂ Dec. 6	13 28	6 16 58		20 24	11 22 11,1		69 20				
	26 19	29 49		33 18:			67 40	29 94	—11½	—23½	W. Aldebaran easterly
	18 3	16 14 32					67 40				
	30 56	27 24					69 20	29 98	—16	—26	W. Aldebaran westerly
♃ 8	6 22	6 9 52		13 19	11 15 6⅓		69 20	30 21	— 2	—15	W. Aldebaran easterly
	23 52	16 20 22		16 53			69 20	30 14	— 4½	—14	W. Aldebaran westerly
♄ 10		6 10 21		13 49	11 7 57,3		68 20				
	17 11	6 20 41		24 9			67 0	29 58	—10	—23½	W. Aldebaran easterly
	58 43½	15 55 13					67 0				
	8 4	16 5 34		2 6			68 20	29 51	—23	—32	W. Aldebaran westerly
⊙ 11	3 23	6 6 55			11 4 29,8		68 20				
	16 21	19 51		23 20			66 40	29 50	—27	—37	D. Aldebaran easterly
		15 49 9					66 40				
	5 38	16 2 3					68 20	29 39	—31	—42	D. Aldebaran westerly

At 21h I found that the regulator had stopped at 20h 16′ 3″, notwithstanding the fire was very good and by agreement with Mr. Wales, I let the fire go out, the stove being obliged to stand so near the side o the observatory that a little extraordinary fire would endanger the same, it having twice mel ed the lead at the back already; I also took of the weight off the regulator to ease it, and let it stand. J. D.

1769

1769		Equal altitudes. Times by the clock.				Zenith distance	Barometer.	Thermometers.		Phænomena and Circumstances.	
March.		Lower Wire	Middle Wire.	Upper Wire	Passed the Meridian		Inches	A	B	Observer	
		′ ″	h ′ ″	′ ″	h ′ ″	° ′					
☌	15	39 1	7 43 50	18 39	10 7 37¾	53 0	29,76	—22	—30	W.	Regulus easterly
		53 33	7 58 44	3 58		51 40					
		21 44				51 40	29,68	—28	—34	W.	Regulus westerly
		36 13	12 31 25	26 37		53 0					
		N. B. These were made by the assistant Clock.									
☌	28	Set Mr. Ellicott's clock a going.									
☌	29	32 48	9 36 25	39 59	13 36 26¼	57 20	29,81	+ 2	0	W.	Arcturus easterly
		43 29	47 7	50 44		56 0					
		29 22	17 25 43½	22 7		56 0	29,80	—10	—17	W.	Arcturus westerly
		40 6	36 29	32 55		57 20					
♃	30	5 3	20 8 52	12 40		70 40	29,79	+ 1	+ 8	W.	⊙'s U. L. ⊙'s L. L. easterly
		9 37	13 28	17 16							
♀	31	6 50	4 2 59	59 11	0 7 45,2	70 40	29,83	+14	+15	W.	⊙'s L. L. ⊙'s U. L. westerly
		11 25	7 35	3 49							
⊙	April 2	43 24	19 47 4	50 42		72 20	29,85	— 8	— 5	D.	⊙'s U. L. ⊙'s L. L. easterly
		47 45	51 25	55 5							
☽	3	29 38	4 25 57	22 17	0 8 12,2	72 20	30,00	+ 5	+12	D.	⊙'s L. L. ⊙'s U. L. westerly
		54 0	30 20	26 40							
♂	4	40 56	19 44 6	48 17		72 0	30,12	— 6	— 3	D.	⊙'s U. L. ⊙'s L. L. easterly
		45 17	48 58	52 37							
☿	5	32 29	4 28 49	25 8		72 0	30,12	+12	+20	D.	⊙'s L. L. ⊙'s U. L. westerly
			33 15	29 35							
		38 28	19 42 7	45 44		72 0	30,08	— 1	+ 8	D.	⊙'s U. L. ⊙'s L. L. easterly
		42 50		50 6							
♃	6	35 16	4 31 36	28 0	0 8 33,4	72 0	30,14	+14	+16	D.	⊙'s L. L. ⊙'s U. L. westerly
		39 36	35 57	32 21							
♄	8	20 28	19 24 2	27 35		73 20	30,00	+ 6	+12	W.	⊙'s U. L. ⊙'s L L. easterly
		24 43	28 17	31 49½							
⊙	9	53 58	4 50 23	46 51	0 8 50,8	73 20	29,99	+22	+27	W.	⊙'s L. L. ⊙'s U. L. westerly
		58 13	54 39	51 7½							
☽	10	26 16	19 29 51	33 24		72 0	30,20	— 7	— 6	W.	⊙'s U. L. ⊙'s L. L. easterly
		30 32	34 8	37 41							
♂	11	48 41	4 45 5	41 31	0 9 7,6	72 0	30,24	+ 8	+12	W.	⊙'s L. L. ⊙'s U. L. westerly
		52 56½	49 22	45 49							
☿	12	13 47::	19 17 21	20 53		73 0	29,73	+ 5	+12	W.	⊙'s U. L. ⊙'s L. L. easterly
		18 3	21 35	25 5							
♃	13	1 44	4 58 10	54 41	0 9 23,7	73 0	29,63	+23	+17	W.	⊙'s L. L. ⊙'s U. L. westerly
		5 57	5 2 24	58 55							
♄	15	I find from a mean of 8 comparisons made in the course of this week, and that which immediately preceded the last, that the assistant clock gains on Mr. Ellicott's at the rate of 3″, 03 in 6 hours: but from a mean of 4 taken the week preceding the last, it gained only 2″ 81; and from the 4 which were made this week, it gains 3″ 25 in six hours. W. W.									
		2½″, 3″, 3″, 2¾″									
		3″ 4″ 3″ 3″									
♄	15	30 29	20 33 23	37 16		62 48	29,91	+ 1	+ 6	D.	⊙'s U. L. ⊙'s L. L. easterly
		34 7	38 3	41 57							
⊙	16	46 20	3 42 25	38 32	0 9 50,—	62 48	29 87	+13	+12	D.	⊙'s L. L. ⊙'s U. L. westerly
			47 5	43 12							

1769		Equal altitudes. Times by the clock.						Zenith diſtance	Barometer	Thermometers		Phænomena and circumſtances.	
April		Lower Wire	Middle Wire		Upper Wire	Paſſed the Meridian			Inches	A	B	Observer	
		′ ″	h ′ ″		′ ″	h ′ ″		° ′					
♄	22	14 6	20 17 48		21 32			62 40	29,45	+22	+32	W.	⊙'s U. L. ⊙'s L. L. easterly
		18 33	22 17		26 2								
☉	2	3 48	4 0 1			0 10 46,7		62 40	29,45	36	41	W.	⊙'s L. L. ⊙'s U. L. westerly
		8 14	4 4 31										
		3 12	19 6 41					71 20	29,60	26	28	W.	⊙'s U. L. ⊙'s L. L. easterly flying clouds
		7 21	10 53		14 22								
			22 16½		25 46			69 20					
		22 59	26 29		29 58								
☽	24	59 35	4 56 3		52 34	0 10 50,8		69 20	29,69	35	32	W.	⊙'s L. L. ⊙'s U. L. westerly a little uncertain be cauſe of clouds
		3 49	5 0 17		56 47:								
		15 14	11 43		8 13			71 20	29,69	34	31	W.	⊙'s L. L. ⊙'s U. L.
		19 26	15 56		12 29								
		1 0	21		9 15			56 40	29,72	22	37	W.	⊙'s U. L. ⊙'s L. L. easterly thin cloud
		5 54	21 10 6		14 15								
♂	25	16 43	3 12 37		8 30	0 11 1,5		56 40	29,75	36	43	W.	⊙'s L. L. ⊙'s U. L. westerly
		21 45	17 36		13 30								
		25 12	19 28 43		32 13			68 0	29,67	27	33	W.	⊙'s U. L. ⊙'s L. L. easterly
		29 26	32 57		36 27								
☿	26	53 39	4 50 8			0 11 7,5		68 0	29,59	43	45	W.	⊙'s L. L. ⊙'s U. L. westerly very haz.
		57 52	54 23		50 50::								
		33 46:	21 38 21		42 54			52 40	29,66	36	44	W.	⊙'s U. L. ⊙'s L. L. easterly
		39 17	43 54		48 28								
♃	27	43 50	2 39 11		34 36	0 11 14,3		52 40	29,83	49	57	W.	⊙'s L. L. ⊙'s U. L. westerly
		49 22	44 47		40 12								
		21 10	19 24 41		28 10			68 0	29,92	33	35	W.	⊙'s U. L. ⊙'s L. L. easterly
		25 23	28 55		32 25								
♀	28	58 5	4 54 32		51 3	0 11 19,0		68 0	29,99	42	48	W.	⊙'s L. L. ⊙'s U. L. westerly
		2 17:	58 45		55 15								
☿	May 3	5 26	20 9 5		12 42			61 0	30,20	32	38	D.	⊙'s U. L. ⊙'s L. L. easterly
		9 43	13 20		16 57								
♃	4	15 43			8 26			61 0	30,20	45	49	D.	⊙'s L. L. ⊙'s U. L. westerly
		19 59	4 16 21		12 43	0 12 22½							
		3 34	20 7 10		10 47			61 0	30,16	39	47	D.	⊙'s U. L. ⊙'s L. L. easterly
		7 48	11 26		15 2								
♀	5	17 37	4 13 58		10 22	0 12 22,8		61 0	30,03	55	62	D.	⊙'s L. L. ⊙'s U. L. westerly
		21 52	18 14		14 39								
♃	11	39 32	19 43 6		46 37			62 40	29,97	24	22	W.	⊙'s U. L. ⊙'s L. L. easterly
		43 47	47 20		50 51								
♀	12	44 55	4 41 22		37 53	0 14 3,05		62 40	30,12	27	25	W.	⊙'s L. L. ⊙'s U. L. westerly
		49 10	45 37		42 6								
		59 56	5 7 36		15 46			53 20	30,13	27	25	W.	☽'s U. L. easterly
		17 43	27 5		37 45			52 20	30,14	27	24	W.	
		53 49	7 44 29					52 20	30,15	25	21	W.	☽'s U. L. westerly
		11 29	8 3 55		55 48			53 20	30,15	24	20	W.	
		47 13	8 52 7		57 6			44 40	30,14	23	17	W.	Arcturus easterly
		2 9	9 7 31		12 59	10 58 29,3		43 20	30,14	23	16	W.	
		54 52	12 49 31		44 1::			43 20	30,14	19	14	W.	Arcturus westerly
		9 44	13 4 49		59 50			44 40	30,14	19	15	W.	

1769		Equal altitudes. Times by the clock.						Zenith distance	Barometer	Thermometers		Phænomena and Circumstances.		
	May	Lower Wire		Middle Wire		Upper Wire		Passed the Meridian						
		′ ″		h ′ ″		′ ″		h ′ ″		Inches	A	B	Observer	
☽	22	49 48		20 53 36:		57 24								
		54 21		58 10		1 59			52 20	29,66	32	45	W.	⊙'s U. L. ⊙'s L. L. East. unc. because of
♂	23	41 19		3 37 29		33 40		0 17 38,3						
		45 50		42 3		38 16			52 20	29,75	40	46	W.	⊙'s L. L. clouds
		At 20h put the clock back.											W.	⊙'s U. L. west. flying clouds
		10 25		20 14 5		17 45								
		14 48		18 29		22 11		23 56 1,0	54 20	29,82	27	39	W.	⊙'s U. L. easterly
☿	24	37 38		3 33 56		30 15								⊙'s L. L. hazy
		41 59		38 18		34 39			54 20	29,89	44	48	W.	⊙'s L. L. westerly
♃	25	14 7		20 17 48		21 31		23 56 43,7						⊙'s U. L. hazy
		18 31		22 13					53 40	29,81	34	46	W.	⊙'s U. L. east. very
♀	26	35 18		3 31 35										⊙'s L. L. hazy
		39 42		36 0		32 18			53 40	29,70	47	59	W.	⊙'s L. L. west. flying
⊙	28	58 33		19 2 3		5 30½		23 57 50,3						⊙'s U. L. clouds
		2 39		6 12½		9 35½			63 0					⊙'s U. L.
		14 1		17 31		20 58				29,78	31	34	D.	⊙'s L. L. easterly
		18 8½		21 39		25 6			61 0					⊙'s U. L.
☽	29	37 57:		4 34 23½										⊙'s L. L.
		42 3:		38 35:		35 6:			61 0					⊙'s L. L. west. the
		53 23:		49 50:		46 25				29,85	47	49	D.	⊙'s U. L. ⊙ almost
		57 28:		53 59:		50 32:			63 0					⊙'s L. L. covered
		57 56		19 1 25		4 52		23 58 12½						⊙'s U. L. with clo. at times
		2 3½		5 31½		8 59			63 0	29,88	34	36	D.	⊙'s U. L. ⊙'s L. L.
		13 25		16 54½		20 23								
		17 32½		21 3		24 31			61 0	29,88	35	38	D.	⊙'s U. L. ⊙'s L. L. easterly
♂	30	39 16		4 35 44:										
		43 21		39 51		36 25			61 0	29,90	49	49	D.	⊙'s L. L. ⊙'s U. L. west. very hazy
		54 44		51 13½		47 49:								
		58 51		55 21½		51 54½			63 0	29,89	49	49	D.	⊙'s L. L. ⊙'s U. L. westerly
♀	June 2	56 5		18 59 34½				23 59 47½						⊙'s U. L.
		0 11		19 3 39½		7 16			63 0	29,95	35	41	D.	⊙'s L. L.
		11 32		15 2		18 31								⊙'s U. L.
		15 40		19 10½		22 37½			61 0	29,95	36	42	D.	⊙'s L. L. easterly
		27 4		30 34½		34 4								⊙'s U. L.
		31 12½		34 43½		38 12½			59 0	29,95	36	43	D.	⊙'s L. L.
		42 40		46 13		49 44								⊙'s U. L.
		46 51½		50 25½		53 56			57 0	29,95	37	45	D.	⊙'s L. L.
♄	3	12 58		4 9 25										⊙'s L. L.
				13 38		10 8			57 0	29,89	52	58	D.	⊙'s U. L.
		28 41½		25 10½		21 38								⊙'s L. L.
		32 47		29 17½		25 47½			59 0	29,89	53	59	D.	⊙'s U. L.
		44 11		40 41½		37 14								⊙'s L. L.
		48 20		44 50		41 22			61 0	29,89	53	59	D.	⊙'s U. L. westerly
		59 39½		56 11½		52 38½								⊙'s L. L.
		3 49		5 0 18					63 0	29,89	53	60	D.	⊙'s U. L.
				18 59 10		2 36								
		59 51		19 3 20		6 46			63 0	29,65	38	42	W.	⊙'s U. L. ⊙'s L. L. easterly

1769 June	Equal altitudes. Times by the clock. Lower Wire	Middle Wire	Upper Wire	Passed the Meridian	Zenith distance	Barometer	Thermometers A	Thermometers B	Observer	Phænomena and Circumstances.
	′ ″	h ′ ″	′ ″	h ′ ″	° ′	Inches				
♄ 3	11 9	14 36	18 2		61 0	29,65	38	42	W.	⊙'s U. L. ⊙'s L. L. easterly
	15 18	18 45	22 12							
	26 37	19 30 7	33 35		59 0	29,65	39	45	W.	⊙'s U. L. ⊙'s L. L. very hazy
	30 47		37 48							
	42 14	45 47	49 18		57 0	29,64	40	46	W.	⊙'s U. L. ⊙'s L. L.
	46 29	50 2	53 32							
☉ 4		4 10 34::	7 1:	0 0 9,3	57 0	29,55	52	54	W.	⊙'s L. L. ⊙'s U. L. westerly very uncertain
			11 18::							
		4 26 14	22 45		59 0	29,55	52	53	W.	⊙'s L. L. ⊙'s U. L.
	33 56::	30 28								because of clou.
	45 17	41 49			61 0	29,55	51	52	W.	⊙'s L. L. ⊙'s U. L.
	49 27:	45 56::	42 33							
	18 36	19 22 6			60 0	29,47	37	43	W.	⊙'s U. L. ⊙'s L. L.
	22 46:		29 47							
	34 8	37 36	41 7		58 0	29,47	38	43	W.	⊙'s U. L. ⊙'s L. L. easterly
	38 18	41 49	45 26							
	49 49	53 22	56 51		56 0	29,47	38	44	W.	⊙'s U. L. ⊙'s L. L.
	54 5	59 38	1 9							
♃ 5	7 21	4		0 0 34,8	56 0	29,46	49	53	W.	⊙'s L. L. ⊙'s U. L. westerly very
		4 8 2								
	23 5		16 2::		58 0	29,46	50	52	W.	⊙'s L. L. ⊙'s U. L. cloudy and uncertain
	27 18	23 45::	20 17							
	38 39	35 8	31 40		60 0	29,46	50	52	W.	⊙'s L. L. ⊙'s U. L.
	42 51	39 19								
♄ 10	10 15½	19 13 44			61 0	29,49	37	41	D.	⊙'s U. L. ⊙'s L. L. easterly
	14 23	17 51	21 17½							
	41 16	44 45½	48 17		57 0					⊙'s U. L. ⊙'s L. L.
	45 26	48 59	52 30½							
☉ 11	21 11	4 17 38	14 8½	0 3 14,3	57 0	29,66	55	54	D.	⊙'s L. L. ⊙'s U. L. westerly
	25 22½	21 49½	18 19							
	52 16	48 47	45 20		61 0	29,67	55	55	D.	⊙'s L. L. ⊙'s U. L.
	56 25½	52 54½								
☽ 19	25 14	19 28 44	32 12		59 20	29,75	44	48	W.	⊙'s U. L. ⊙'s L. L. easterly
	29 24	32 55	36 23							
	40 47	44 18	47 47½		57 20					⊙'s U. L. ⊙'s L. L.
	44 59	48 30	50 0½							
♂ 20	29 56	4 26 25	22 54	0 7 26¼	57 20	29,72	63	63	W.	⊙'s L. L. ⊙'s U. L. westerly
	34 7	30 36	27 7							
	45 27	41 57	38 28		59 20					⊙'s L. L. ⊙'s U. L.
	49 37	46 7	42 38							
☿ 21	26 8½	19 29 38	33 6		59 20	29,74	40	41	W.	⊙'s U. L. ⊙'s L. L. easterly
	30 20	33 50	37 19							
	41 43½	45 14	48 43		57 20					⊙'s U. L. ⊙'s L. L.
	45 55	49 26	52 55½							
♃ 22	30 45	4 27 14	23 43	0 8 19¾	57 20	29,80	60	60	W.	⊙'s L. L. ⊙'s U. L. westerly
	34 56	31 26	27 55							
	46 18	42 48	39 18		59 20					⊙'s L. L. ⊙'s U. L.
	50 27	46 58	43 30							

1769		Equal altitudes. Times by the clock.					Zenith distance	Barometers	Thermometers		Phænomena and Circumstances.		
June		Lower Wire	Middle Wire	Upper Wire	Passed the Meridian			Inches	A	B	Observer		
		′ ″	h ′ ″	′ ″	h ′ ″		° ″						
♃	22	11 18	19 14 47				61 20	29,68	46	49	W.	⊙'s U. L.	easterly
		15 27½	18 57	22 2½								⊙'s L. L.	
♀	23	2 6	4 58 38	55 11	0 8 48,2		61 20	29,58	61	62	W.	⊙'s L. L.	westerly
		6 15	5 2 46	59 19								⊙'s U. L.	
		55 51	19 59 23				55 40	29,51	48	48	W.	⊙'s U. L.	easterly
		0 5	20	7 9:								⊙'s L. L.	
♄	24	18 18	4 14 45	11 13	0 9 12,8		55 40	29,60	57	56	W.	⊙'s L. L.	westerly
		22 32	18 59	15 27								⊙'s U. L.	
♂	27	3 49½	20 7 20:	10 56:			55 0	29 60	50	59	D.	⊙'s U. L.	easterly
		8 1	11 34	15 9								⊙'s L. L.	
☿	28	13 49	4 10 14	6 41½	0 10 58,6		55 0	29,80	66	65	D.	⊙'s L. L.	westerly
		18 0½	14 29	10 56:								⊙'s U. L.	
☉ July	2	23 59	19 27 28½	30 56			60 40	29,57	52	56	W.	⊙'s U. L.	easterly
		28 8	31 38	35 5								⊙'s L. L.	
☽	3	57 55	4 54 26	50 58	0 13 8,0		60 40	29,49	70	79	W.	⊙'s L. L.	westerly
		2 4	58 34									⊙'s U. L.	
♃	6	28 8½	19 31 39	35 8			60 40	30,08	46	50	W.	⊙'s U. L.	easterly
		32 18	35 48½	39 17								⊙'s L. L.	
		43 40	47 10½	50 39½			58 40					⊙'s U. L.	
		47 50½	51 21	54 50:								⊙'s L. L.	
♀	7	41 29	4 37 58	34 28	0 14 48,1		58 40	30,16	56	54	W.	⊙'s L. L.	westerly
		45 39	42 9	38 39								⊙'s U. L	
		57 3		50 5			60 40					⊙'s L. L.	
		1 13:	57 44	54 14								⊙'s U. L.	
♃	13	49 44	19 53 16	56 46			59 0	29,73	48	48	D.	⊙'s U. L.	easterly
		53 54	57 26	0 57								⊙'s L. L.	
♀	14	40 38	4 37 8	33 37	0 17 27,5		59 0	29,68	55	57	D.	⊙'s L. L.	westerly
			41 17	37 47								⊙'s U. L.	
		56 20½	19 59 53	3 24			58 20	29,60	49	48	D.	⊙'s U. L.	easterly
		0 31	20 4 4	7 35								⊙'s L. L.	
♄	15	34 40	4 31 8	27 36½	0 17 46,9		58 20	29,65	55	50	D:	⊙'s L. L.	westerly
		38 51	35 19½	31 49								⊙'s U. L.	
♃	27	55 57½	19 59 29	3 0			61 0	29,61	51	54	D.	⊙'s U. L.	easterly
		0 7	20 3 40½	7 12								⊙'s L. L.	
♀	28	41 56	4 38 24	34 53	0 21 18,9		61 0	29,67	67	70	D.	⊙'s L. L.	westerly
		46 6½	42 35	39 4								⊙'s U. L.	
♂ Aug.	1	Put the clock back.									W.		
♃	3	52 4	19 55 40	59 15			61 0	29,65	45	50	W.	⊙'s U. L.	easterly
		56 21½	59 58	3 34								⊙'s L. L.	
♀	4	14 11	4 10 34½	6 59	0 5 35,4		61 0	29,64	60	56½	W.	⊙'s L. L.	westerly
		18 29	14 53	11 18								⊙'s U. L.	
☽	7	12 42½	19 16 13	19 42½			67 0	29,50	49	51	D.	⊙'s U. L.	easterly
		16 51½	20 22½									⊙'s L. L.	
♂	8	54 34	4 51 2½		0 6 5¾		67 0	29,44	56	61	D.	⊙'s L. L.	westerly
		58 44	55 14	51 44								⊙'s U. L.	
♂	15	34 37½	19 38 12	41 44½			66 20	29,98	46	49	W.	⊙'s U. L.	easterly
		38 55	42 29									⊙'s L. L.	

1769	Equal altitudes. Times by the clock.						Zenith distance		Barometer	Thermometers		Phænomena and Circumstances.	
August.	Lower Wire		Middle Wire		Upper Wire	Passed the Meridian			Inches	A	B	Observer	
	′ ″		h ′ ″		′ ″	h ′ ″	° ′						
☿ 16	33 37		4 30 2		26 29½	0 6 39,9	66	20	30,01	54	57	W.	☉'s L. L. westerly ☉'s U. L.
	37 54		34 20		30 47								
24 24	6 13½		20 9 57½		13 43		65	0	29,54	46	50	D.	☉'s U. L. easterly ☉'s L. L.
	10 39		14 25		16 11								
♀ 25	1 39					0 6 34½	65	0	29,64	58	57	D.	☉'s L. L. westerly ☉'s U. L.
	6 7½		4 2 21½										

1768	Apparent Times.			Zenith distances.						Barometer.	Thermometers.			Phænomena and Circumstances.
September				90 Arch		96 Arch			Subt.	96 Arch reduced	Inches	A	B	Observer	
	h	′	″	°	′ ″	G.	S.	V.	″						
24 15				55	52 33	59	2	12	20	55 51 49	29,61	46	42½	W.	☉'s U. L. on merid.
♂ 20				58	20 58	62	0	30	9	58 20 32	30,06	47	41	D.	☉'s L. L. ditto.
☿ 21				58	12 30	62	0	11	6	58 12 15	30,09	45½	49	D.	☉'s U. L. ditto.
24 22				59	7 44	63	0	9	16	59 7 26	29,93	57	60	D.	☉'s L. L. ditto.
♂ 27				60	32 24	64	2	10	21	60 32 10	29,77	47	48	W.	☉'s U. L. ditto.
24 29				50	30 36	53	3	15	6	50 29 56	29,99	52	49	W.	α aquilæ on the merid.
				9	46 57	10	1	24	2	9 47 2	29,97	43	38½	W.	α perſei do. pl. qua. E.
	15	40	56	35	19 36	37	2	22	10	35 18 53	29,78	42½	38	W.	☽'s U. L. on merid.
♀ 30				61	42 40	65	3	10	25	61 42 25	29,98	47	47½	W.	☉'s U. L. on meri. ☉'s L. L.
				62	15 0	66	1	19	13	62 14 42					
♄ Oct. 1				62	38 15	66	3	9	15	62 38 23	29,79	46	45½	W.	☉'s L. L. on merid.
☉ 2				14	19 21	15	1	3	16	14 18 52	29,19	46	39	D.	α cygni ditto.
♄ 13				50	30 34	53	3	15	4	50 29 58	29,82	32	28½	W.	α aquilæ ditto. (v. g.)
				14	19 25	15	1	3	0	14 19 8	29,82	32	28½	W.	α cygni ditto. (v. g.)
				13	2 44	13	3	22	12::	13 2 54	29,84	28	27	W.	capella do. pl. qu. W.
♀ 14				67	2 54	71	2	2	2	67 2 43	29,90	37	34	W.	☉'s U. L. on the ☉'s L. L. merid.
				67	35 25	72	0	12	10	67 35 6					
				50	30 49	53	3	16	8	50 30 20	29,90	38	32	W.	α aquilæ ditto.
				9	45 52	10	1	21	0	9 45 47	29,86	31	28	W.	α perſei do. pl. qu. W.
				13	3 12	13	3	23	25	13 3 8	29,83	31	27	W.	capell. do. do. ver. hazy
☉ 16				68	19 22	72	3	16	17	68 18 56	30,20	25	18½	D.	☉'s L. L. on merid.
				20	12 18	21	2	7	6	20 12 21	30,18	27	21	D.	α lyræ ditto.
				50	30 52	53	3	16	6	50 30 22	30,18	27	21	D.	α aquilæ ditto.
				14	19 30	15	1	4	11	14 19 23	30,17	26	20½	D.	α cygni ditto.
☽ 17				68	9 20	72	2	25	16	68 8 51	30,22	29	23½	D.	☉'s U. L. ditto.
				20	12 20	21	2	7	2	20 12 25	30,18	29	26½	D.	α lyræ ditto.
				14	19 36	15	1	4	6	14 19 28	30,14	28	23½	D.	α cygni ditto.
				9	46 48	10	1	23	16	9 46 24	30,05	25	21	D.	α perſei do. pl. qu. E.
				13	3 34	13	3	23	20	13 3 13	30,01	27	24	D.	capella ditto. ditto.
♀ 28				50	30 24	53	3	15	14	50 29 48	29,87	19	11½	W.	α aquila on meridian
				14	18 51	15	1	3	18	14 18 50	29,87	17½	10½	W.	α cygni ditto.
♄ 29				9	45 54	10	1	21	6	9 45 41	30,07	14	9½	W.	α per. do. pl. qu. E haz.

1768		Apparent Times	Zenith distances. 90 Arch	96 Arch	ub.	96 Arch reduced	Barometer.	Thermometers. A.	B	Observer	Phænomena and Circumstances.
November		h / //	o / //	G. S. V.	//	o / //	Inches				
☉	6		50 29 11	53 3 12	6	50 28 37	29,65	+ 6	—3	W.	α aquilæ on meridian
			14 18 40	15 1 2	3	14 18 38	29,65	+ 5	—3½	W.	α cygni ditto.
☌☿	9		50 29 38	53 3 14	12	50 29 23	29,89	0	—3½	W.	α aquilæ ditto.
☌☿	16		14 18 48	15 1 2	0	14 18 41	29,58	+ 4	—5	D.	α cygni ditto.
		*** Many of the preceding obſervations can be of no uſe in determining the latitude of the place; but I thought it might be uſeful to inſert them, as they ſerve to ſhew what a very great alteration happened in the poſition of the line of collimation of the quadrant, about this time. W. W.									
☿	16		9 45 40	10 1 20	15	9 45 6	29,62	+ 7	— 2	D.	α perſ. on m. pla. qu. E.
			13 2 53	13 3 21	20	13 2 20	29,63	+ 5	— 2	D.	capella ditto ditto.
♀	18	5 32 43	65 0 0								
		37 30	64 40 0								
		42 31	64 20				29,87	—6½	—12½	D.	☽'s L. L. eaſt merid.
		47 50	64 0 0								
		53 11	63 40 0								
		7 28 28	60 11 16	64 2 7	14		29,87	— 8	—13	D.	☽'s L. L. on merid.
		36 28	60 30 20								
		41 28	60 30 50				29,88	— 8	—14	D.	☽'s L. L. weſt merid.
		49 8	60 33 16								
		54 28	60 36 48								
			9 46 32	10 1 23	20	9 46 20	29,88	— 2	—13½	D.	α perſei ⎫ on mer. pl.
			13 3 32	13 3 23	24	13 3 9	29,89	— 1	—14	D.	capella ⎭ of qu. W.
			51 25 44	54 3 13	0	51 25 24	29,90	0	—14	D.	α orionis on merid.
♄	19		9 46 0	10 1 21	0	9 45 47	29,85	—10	—15	D.	α perſei do. pl. qu. E.
☽	28		9 45 48	10 1 20	4	9 45 17	29,35	— 8	—18	D.	α perſei ⎫ on merid. pl.
			13 2 26	13 3 20	4	13 2 10	29,37	—10	—18½	D.	capella ⎭ of quad. E.
♂	29		9 47 30	10 1 24	3	9 47 3	29,51	— 5	— 9	D.	α perſei ⎫ on merid. pl.
			13 3 28	13 3 23	3	13 3 30	29,63	— 4	—12	D.	capella ⎭ of quad. W.
♀ Dec.	2		58 11 18	62 0 9	24	58 11 3	29,55	— 5	—16	D.	α urſ. maj. on m. bel. p.
			29 16 20	31 0 28	12	29 15 51	29,53	— 6	—16	D.	polaris do. above pole
			65 2 10	69 1 15	16	65 1 38	29,52	— 6	—16	D.	ζ urſ. maj. do. bel. pole
♄	3		58 11 30	62 0 9	13	58 11 14	29,56	— 1	— 8	D.	α urſ. maj. do. do.
			29 16 17	31 0 28	12	29 15 51	29,56	— 2	—10	D.	polaris do. above pole
			65 2 7	69 1 15	24	65 1 30	29,56	—2½	—10½	D.	ζ urſ. maj. do. bel. pole
			9 46 14	10 1 21	16	9 45 32	29,53	— 3	—12	D.	α perſei do. pl. qu. E.
♂	6		58 11 32	62 0 9	19	58 11 8	29,94	—11½	—23	W.	α urſ. maj. do. bel. pole
			9 47 30	10 1 24	0	9 47 7	29,95	— 9	—23	W.	α perſei do. pl. qu. W.
♀	7		66 11 48	70 2 13	0	66 11 20	30,10	—10	—21½	W.	γ urſ. maj. do. bel. pol.
♃	8		66 11 40	70 2 13	0	66 11 20	30,21	— 3	—15½	W.	do. do. do.
			65 2 41	69 1 16	4	65 2 17	30,21	— 3	—16	W.	ζ urſ. maj. do. do.
♄	10		9 46 0	10 1 21	12	9 45 35	29,54	—10	—25	W.	α perſei do. pl. qu. E.
♃	15		58 11 20	62 0 8	0	58 11 1	29,92	—24	—25	D.	α urſ. maj. do. bel. pol.
			29 15 56	31 0 28	16	29 15 47	29,94	—23½	—25	D.	polaris do. above pole
			65 1 57	69 0 14	8		29,95	—23½	—25½	D.	ζ urſ. maj. do. bel. pole
☽	19		66 11 39	70 2 13	4	66 11 12	29,89	—15	—21	W.	γ urſ. maj. do. do.
			29 16 16	31 0 28	14	29 15 49	29,89	—15	—21	W.	polaris do. above pole

1769		Apparent Times	Zenith distances.							Barometer	Thermometers		Phænomena and Circumstances.
January			90 Arch			96 Arch		Su.	96 Arch reduced		Inches	A	B	Observer	
			°	′	″	G.	S. V.	″	° ′ ″						
☉	1		70	41	4	75	1 19	11	70 40 59		29,94	—25	—29	W.	η urs. maj. on mer. bel. the pole
			33	6	28	35	1 8	0	33 6 20		30,16	—25	—27	W.	polaris, ditto, ditto
☽	2		70	41	9	75	1 19	20	70 40 50		30,19	—28	—34	W.	η urs. maj. ditto, ditto
♂	17		42	45	20	45	2 13	0	42 45 5		29,46	—34	—39	W.	aldebaran on the meridian
☿	18		29	16	16	31	0 28	12	29 15 49		29,45	—34	—38	W.	polaris on merid. above the pole
			65	2	20	69	1 15	20	65 1 34		29,45	—34	—39	W.	ζ urs. maj. ditto below the pole
			70	41	30	75	1 19	14	70 40 56		29,44	—34	—39	W.	η urs. maj. ditto, ditto
			42	45	20	45	2 14	20	42 45 12		29,36	—34	—36	W.	aldebaran on the meridian
♀	20		65	2	27	69	1 15	14	65 1 40		29,45	—27	—30	W.	ζ urs. maj. on merid. bel. the pole
			2	39	44	2	3 12	12	2 39 46		29,55	—33	—36	W.	ditto, ditto above the pole
			8	20	20	8	3 19	16	8 20 16		29,55	—33	—36	W.	η ditto, ditto, ditto
♄	21		70	41	28	75	1 19	15	70 40 55		29,74	—31	—36	W.	ditto, ditto below the pole
♄	28		75	24	10	80	1 22	2	75 23 42		30,13	—37	—40	W.	capella, ditto, ditto
☉	29		70	41	38	75	1 19	8	70 41 2		30,08	—30	—34	W.	η urs. maj. ditto, ditto
			9	46	7	10	1 21	3	9 45 44		30,07	—30	—35	W.	α persei, ditto above the pole
			13	3	7	13	3 22	0	13 3 6		30,05	—31	—36	W.	capella, ditto, ditto
			2	39	52	2	3 12	14	2 39 44		30,00	—35	—40	W.	ζ urs. maj. ditto, ditto
			8	19	4	8	3 16	10	8 19 3		30,00	—35	—40	W.	η urs. maj. ditto, ditto
			72	7	52	76	3 24	24	72 7 30		29,99	—36	—41	W.	α persei, ditto below the pole
			75	23	56	80	1 22	16	75 23 28		29,98	—36	—41	W.	capella, ditto
			70	41	28	75	1 19	15	70 40 55		29,97	—28	—31	W.	η urs. maj. ditto, ditto (hazy)
☽	30		13	3	8	13	3 22	10	13 2 56		29,96	—29	—30	W.	capella, ditto above the pole
♂	31		9	46	16	10	1 22	20	9 45 54		30,17	—24	—31	W.	α persei, ditto, ditto
			13	3	10	13	3 22	12	13 2 54		30,16	—26	—31	W.	capella, ditto, ditto
☉ Feb.	5		13	3	16	13	3 23	20	13 3 13		29,79	—16	—20	D.	capella, ditto, ditto
			51	26	36	54	3 16	24	51 26 19		29,79	—16	—20	D.	α orionis on the meridian
☿	8		42	45	30	45	2 13	12	42 44 53		30,03	—13	—12	D.	aldebaran, ditto
			13	3	30	13	3 23	10	13 3 23		30,03	—13	—13	D.	capella, ditto above the pole
			51	26	32	54	3 16	24	51 26 19		30,02	—13	—13	D.	α orionis on the meridian
			33	7	16	35	1 10	20	33 6 52		29,83	—13	— 9	D.	polaris, ditto below
			42	45	38	45	2 13	10	42 44 55		29,60	+ 7	+12	D.	aldebaran on the meridian
♃	9		13	3	28	13	3 23	24	13 3 19		29,59	+ 9	+12	D.	capella, ditto above the pole
			33	7	36	35	1 10	10	33 7 2		30,32	—16	—21	D.	polaris below
♀	10		75	24	17	80	1 23	20	75 23 50		30,33	—21	—26	D.	capella below the pole
			75	24	22	80	1 23	18	75 23 52		29,93	—26	—27	W.	ditto, ditto
☽	13		9	46	26	10	1 22	10	9 46 4		29,98	—17	—21	W.	α persei on merid. above the pole
♂	14		13	3	28	13	3 22	6	13 3 0		29,96	—18	—21	W.	capella, ditto, ditto
			42	45	52	45	2 14	0	42 45 32		29,74	—19	—29	D.	aldebaran on the meridian
☿	22		51	26	20	54	3 15	22	51 25 55		29,72	—21	—30	D.	α orionis, ditto
			13	3	28	13	3 23	24	13 3 19		29,83	—20	—26	D.	capella, ditto
♀	24		51	26	24	54	3 15	20	51 25 57		29,84	—20	—28	D.	α orionis, ditto
			33	7	17	35	1 10	16	33 6 56		29,93	—29	—37	D.	polaris, ditto below the pole
			51	26	4	54	3 14	14	51 25 36		29,90	—25	—31	D.	α orionis on the meridian
♄	25		42	45	24	45	2 13	3	42 45 2		30,02	—28	—31	W.	aldebaran on the meridian
♃ Mar.	2		42	45	22	45	2 13	0	42 45 5		29,86	—18	—15	W.	ditto, ditto (v. g.)
♀	3		33	7	20	35	1 10	22	33 6 50		29,70	—31	—36	D.	polaris on the meridian below
☽	6		75	24	34	80	1 24	22	75 24 14		29,69	—36	—41	D.	capella, ditto, ditto

1769		Appar. Time	Zenith distances. 90 Arch	96 Arch	Subt.	96 Arch reduced	Barometer	Thermometers		Observer	Phænomena and Circumstances.
May		h ′ ″	° ′ ″	G. S. V.	″	° ′ ″	Inches	A	B		
♀	12	5 57 22	50 57 0								
		6 0 31	54 0				30,14	+27	+24	W.	☽'s U. L. east of the merid.
		4 10	51 0								
		6 59	49 0								
		21 53	50 44 32	54 0 15	+	50 44 1½	30,14	+26	24	W.	☽'s U. L. on the merid.
		36 51	49 0								
		39 15	51 0								
		42 58	54 0				30,14	24	22	W.	☽'s U. L. west of the merid.
		46 12	57 0								
		51 54	51 3 0								
			38 25 32	40 3 29	0	38 24 56	30,14	+21	+15	W.	arcturus on the meridian
			37 59 44	40 2 3	9	37 59 18	29,74	+41	+42	W.	⊙'s U. L. ditto
☽	22		38 9 29	40 2 26	20	38 9 13	29,87	+36	+43	W.	⊙'s L. L. ditto (hazy)
☿	2		38 25 24	40 3 29	6	38 24 50	29,44	48	44	W.	arcturus on the meridian
☽	une 3		64 29 0	68 3 4	18	64 28 39	29,68	54	58	D.	☽'s U. L. ditto
⊙	11		61 51 50	65 3 29	0	61 51 11	29,68	48	44	D.	δ ε ophiuchi on meridian
			62 53 17	67 0 10	16	62 52 53					
☽	12	6 9 0	70 20 0				29,78	44	40	D.	
		14 14	10 0							D.	
		19 51	0 0							D.	☽'s U. L. east of the merid.
		26 3	69 50 0							D.	
		33 15	69 40 0				29,78	42	40	D.	
		11 10	69 17 5	73 3 19	13	69 16 34	29,79	42	41	D.	☽'s U. L. on the meridian
		46 51	69 40 0							D.	
		54 16	69 50 0				29,79	42	41	D.	☽'s U. L. west of the merid.
		3 0 44	70 0 0							D.	
♂	20		35 3 31	37 1 19	22	35 3 18	29,76	57	64	W.	⊙'s U. L. ⊙'s L. L. on the merid.
			35 35 6	37 3 26	12	35 34 40					
♃	22		35 36 12	37 3 28	6	35 35 39	29,79	54	56	W.	⊙'s L. L. ⊙'s U. L. on the merid.
			35 4 20	37 1 20	16	35 3 50					
♄	24		6 19 22	6 2 31	20	6 18 53	29,57	52	49	W.	β γ draconis on the meridian, plane of the quadrant east
			7 16 20	7 3 1	18	7 16 5	29,57	51	48	W.	
⊙	July 2		7 15 36	7 3 0	13	7 15 43	29,68	56	52	W.	γ drac. do. pl. of quadr. west
♀	7		6 18 56	6 2 30	11 : :	6 18 38	30,14	50	44	W.	β γ draconis ditto, plane of the quadrant east (foggy)
			7 16 22	7 3 1	4	7 16 19	30,13	49	43	W.	
♂	18		7 15 43	7 3 0	14	7 15 42	29,44	57	53	W.	γ drac. do. pl. of quadr. west
♃	20		6 18 46	6 2 30	18	6 18 31	29,64	54	50	W.	β γ draconis, plane of the quadrant west
			7 15 36	7 3 0	18	7 15 38	29,64	53	48	W.	
♀	21		6 19 27	6 3 0	25	6 19 16	29,66	56	52	W.	β γ draconis on the meridian, plane of the quad. east
			7 16 18	7 3 1	10	7 16 13	29,66	56	51	W.	
♄	22		6 18 30	6 2 29	2	6 18 24	29,63	54	50	W.	β γ draconis on the meridian, plane of the quad. west
			7 15 40	7 3 0	12	7 15 44	29,63	54	49	W.	
♄	29		7 16 23	7 3 1	8	7 16 15	29,69	62	58	D.	γ drac. do. pl. of quadr. east
⊙	30		7 15 30	7 3 0	20	7 15 36	29,67			W.	γ drac. on mer. pl. of quad. west
☿	Aug. 2		40 55 30	43 2 19	8	40 55 5½	29,73	57	59	W.	⊙'s U. L. ⊙'s L. L. on merid. clouds
			41 27 28 :	44 0 28	10	41 27 8					
♀	4		7 16 20	7 3 1	16	7 16 7	29,62	55	47	W.	γ drac. do. pl. of quadr. east

1769	Apparent Times	Zenith distances.				Barometer	Thermometers		Phænomena and Circumstances.	
		90 Arch	96 Arch	Su.	96 Arch reduced	Inches	A	B	Observer	
August	h ′ ″	° ′ ″	G. S. V.	″	° ′ ″					
☽ 5		42 15 36	45 0 9	0	42 15 12	29,67	55	54	W.	⊙'s L. L. on the merid.
		41 43 46	44 2 2	23	41 43 37				W.	⊙'s U. L.
	2 37 1	65 14 21	69 2 11	21	65 13 52					
	42 6	65 11 53	69 2 6	25	11 36					
	46 29	65 10 50	2 3	18	10 24					
	54 17	65 10 0	2 1	10	9 39	29,70	59	57	W.	☽'s U. L.
	58 59	65 10 34	2 2	18	9 57					
	3 4 46	65 12 20	2 6	6	11 55					
	9 17	65 14 22	2 10	0	65 13 46					
		65 21 4 :	69 2 25 :	0	65 20 22	29,79	51	47	W.	β aquarii on the meridian
		60 12 36	64 0 28	18	60 12 0	29,80	51	47	W.	α aquarii on the meridian
♄ 12		44 14 50	47 0 25	15	44 14 29	29,63	56	61	D.	⊙'s L. L. on the merid.
⊙ 20	14 20 28	48 40 0								
	23 14	48 35 0								
	28 43	48 31 0				29,81	44	44	D.	☽'s L. L. east of merid.
	20 33 :	48 27 0								
	31 48 ::	48 23 0								
		48 5 42	51 1 6	18	48 5 9	29,81	45	44	D.	Ditto on the meridian
	15 29 23	48 23 0								
	32 26	48 27 0								
	35 19	48 31 0				29,81	45	43	D.	Ditto west of the merid.
	37 53	48 35 0								
	40 58	48 40 0								
♂ 22		47 30 19	50 2 20	0	47 29 25	29,48	54	59		⊙'s L. L on the merid.

1768	Time per clock	Apparent Time	Occultations of Fixed Stars by the Moon, &c. Observed.
September	h ′ ″	h ′ ″	
☿ 21	7 2 9	7 6 52	ρ ♍ immerged behind the ☽'s dark limb (J. D.)
	7 2 16	7 6 59	ρ ♍ immerged behind the ☽'s dark limb (W. W.)
1769			
☿ Mar. 15	11 21 6	11 24 34	ζ ♊ immerged behind the ☽'s dark limb (very exact) W. W.
	12 8 44	12 12 11	Ditto emerged (perhaps about 5″ sooner) J. D.
☿ 29	16 54 0	16 46 22 ::	2[d] ♑ ♐ immerged behind the bright limb of the moon (W. W.)
	53 58	16 46 19	2[d] ♑ ♐ immerged behind the bright limb of the moon (J. D.)
⊙ Apr. 9	10 29 21	10 20 27½	τ ♉ immerged behind the Moon's dark limb J. D.
☽ 10	15 38 44	15 29 39	♃'s 1st satellite immerged close to the body of the planet (W. W.)
	39 14	15 30 9	♃'s 1st satellite immerged close to the body of the planet (J. D.)
⊙ Aug. 11	9 16 47	9 10 22½	The * N° 43 of Ophiuchi in Mr. Flamstead's catalogue immerged behind the dark limb of the ☽ (very faint) J. D.
	10 14 56	10 8 31	B in the same constellation and catalogue immerged J. D.
	10 14 54	10 8 29	Ditto per W. W. N. B. The immersion happened towards the northern limb of the ☽ so very near the intersection of light and darkness, as to render the observation doubtful to 2 or 3″.

The

The following Table for the MICROMETER I received from the late Mr. Short, along with the Instrument.

Wm. Wales.

Inches	′ ″	Decim. of an in.	′ ″	Vern^{r}	″	Vern^{r}	″
1	6 50,2	0,05	0 20,5	1	0,8	20	16,4
2	13 40,4	10	0 41,0	2	1,6	21	17,2
3	20 30,6	15	1 1,5	3	2,5	22	18,1
4	27 20,9	20	1 22,0	4	3,3	23	18,9
5	34 11,1	25	1 42,6	5	4,1	24	19 7
		30	2 3,1	6	4,9		
		35	2 23,6	7	5,7		
		40	2 44,1	8	6,6		
		45	3 4,6	9	7,4		
		50	3 25,1	10	8,2		
		55	3 45,6	11	9 0		
		60	4 6,1	12	9,8		
		65	4 26,6	13	10,7		
		70	4 47,2	14	11,5		
		75	5 7,7	15	12,3		
		80	5 28,2	16	13,1		
		85	5 48,7	17	13,9		
		90	6 9,2	18	14,8		
		95	6 29,7	19	15,6		

1769	Times per clock	Apparent Times	Parts of the micrometer		Micrometer reduced		Observations on the Transit of Venus.	
			Inches	Vernier	′	″		
June	h ′ ″	h ′ ″						
♄	3 0 56 49	0 57 0,6					Exterior contact at the ingress	J. D.
	56 56	0 57 7,6					Ditto	W. W.
	1 15 10	1 15 21,3					Interior ditto	W. W.
	15 14	1 15 25,3					Ditto	J. D.
	57 21	57 31½	0,40	18	2	57,5	Dist. of ♀'s farthest limb from the ☉'s nearest	
	58 36	58 46½	0,10	22	0	57,5	♀'s diameter off the scale	
	2 1 16	2 1 26½	4,60	4½	31	32,3	☉'s diameter	
	2						Cloudy a short time	
	4 11	4 21½	4,25	10	29	13,3	Dist. of Venus's farthest limb from the ☉'s farthest	J. D.
	5 58	6 8½	0,10	19	0	58,2	♀'s diameter on the scale	
	7 33	7 43½	0,50	0½	3	27,1	Dist. of ♀'s farthest limb from the ☉'s nearest	
	9 9	9 19½	0,10	19	0	58,2	♀'s diameter on the scale	
	10 26	10 36¼	0,15	0	0	59,9	Ditto off the scale	
	12 0						Cloudy	

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1769 June	Times per clock h ′ ″	Apparent times h ′ ″	Parts of the micrometer Inches	Vernier	Micrometer reduced ′ ″	Observations on the Tranſit of Venus.	
♄ 3	2 39 0	2 39 10	4,60	1½	31 29,8	⊙'s horizontal diameter	
			4,60	1	31 29,4		
	44 43	44 52¾	0,70	7½	4 54,9	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	51 40	51 49¾	0,10	20½	0 59,4	♀'s diameter on the ſcale of the micrometer	
	53 26	53 35½	0,15	2	1 1,5	Ditto off	
	3 4 58	3 5 7½	0,80	4	5 33,1	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	6 13	6 22½	0,10	21	0 59,8	♀'s diameter on the ſcale	W. W.
						Cloudy	
	17 47	17 56¼	4,60	4	31 31,9	⊙'s inclined diameter	
	19 40	19 49¼	0,85	6:	5 55,2	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	22 20	22 29¼	0,85	14:	6 1,8	Ditto	
	23 38	23 47	0,10	21	0 59,8	♀'s diameter on the ſcale	
	24 35	24 44	0,10	23½	0 58,7	Ditto off	
	42 47	42 55¾	0,10	24	0 59,1	Ditto ditto	
						N. B. Several of the above obſervations are a little uncertain, being taken in great haſte, in the intervals between flying clouds. W. W.	
	46 40	46 48¾	0,90	10½	6 19,4	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	48 0					A ſmall cloud	
	48 49	48 57¾	0,90	11	6 19,8	Diſt. of ♀'s fartheſt limb from the Sun's neareſt	J. D.
	51 33	51 41¾	0,90	12	6 20,6	Ditto	
	55 24	55 32½	0,90	12	6 20,6	Ditto	
	56 19	56 27½	0,90	12½	6 21,1	Ditto	
	59 2	59 10½	0,90	12:	6 20,6	Ditto	
4	0 50	4 0 58½	0,90	11½	6 20,2	Ditto	
	2 51	2 59½	0,90	11½	6 20,2	Ditto	
	5 23	5 31½	0,90	12½	6 21,1	Ditto	
	7 12	7 20½	0,90	12½	6 21,1	Ditto	
	11 5	11 13¼	0,90	12	6 20,7	Ditto	
	14 37	14 45¼	0,90	12	6 20,7	Ditto	
	17 50	17 58¼	0,90	11	6 19,8	Ditto	
	19 50	19 58¼	0,10	22	1 0,7	♀'s diameter on the ſcale	
	21 30	21 38¼	0,10	24	0 59,1	Ditto off	W. W.
	23 27	23 35	4,60	0½	31 29,0		
	25 42	25 50	4,60	1½	31 29,8	⊙'s inclined diameters	
	27 12	27 20	4,60	0½	31 29,0		
	28 42	28 50	4,60	2	31 30,2		
	30 56	31 4	0,90	8		Diſt. of ♀'s fartheſt limb from the Sun's neareſt	
	35 39	35 47	0,90	5		Ditto	
	44 25	44 32¾	0,85	19		Ditto	
	46 14	46 21¾	0,85	17		Ditto	
	50 16	50 23¾	0,85	8		Ditto	
	57 20	57 27½	0,80	20		Ditto	
5	32 55	5 32 2	0,70	3	4 46,4	Ditto	J. D.
	34 52	34 59	0,65	23½	4 42,6	Ditto	
	41¾	41 51¾	0,15	2	0 59,8	♀'s diameter on the ſcale	
	42½	42 36¾	0,10	17	0 58,2	Ditto off	

1769	Times per clock	Apparent times	Parts of the micrometer		Micrometer reduced	Obſervations on the Tranſit of Venus continued.	
			Inches	Vernier			
June	h / //	h / //			/ //		
12	5 43 37	5 43 43¾	0,15	2	0 59,8	♀'s diameter on the ſcale	
	45¾	45 51½	0,10	21	1 1,5	Ditto off	
			0,15	2	0 59,8	Ditto on	
	53—	53 6½	4,60	13½	31 34,8	⊙'s horizontal diameter	
	55—	55 6½	4,60	14	31 35,2		
	59¼	59 21½	0,15	4	1 1,5	♀'s diameter on the ſcale	J. D.
	6 0 41	6 0 47½	0,10	18	0 59,1	Ditto off	
	1 49	1 55½	0,10	21	1 1,5	Ditto ditto	
	3 30	3 36½	0,50	18	3 36,6	Diſt. of ♀'s fartheſt limb from the ⊙'s neareſt	
	4 40	4 46½	0,50	14½	3 33,7	Ditto	
	6 55	7 1½	0,50	11	3 30,8	Ditto	
	8 15	8 21¼	0,50	9	3 29,2	Ditto	
	15 6	15 12¼	0,45	15	3 13,6	Ditto	W. W.
	17 6	17 12¼	0,45	8	3 7,9	Ditto	
	19 6	19 12¼	0,45	1	3 2,1	Ditto	
	21 5	21 11¼	0,40	21	2 58,0	Ditto	
	25 27	25 33	0,40	6	2 45,7	Ditto	
	26 59	27 1	0,40	2 :	2 42,4	Ditto } hazy	
	28 19	28 25	0,40	0 ::	2 40,8	Ditto }	
7	0 40	7 0 45½	The thread of light broke at the internal contact				W. W. J. D.
	0 43	7 0 48½	Ditto				
	18 56	7 19 1¼	The external contact } very hazy, and the limbs badly defined				W. W. J. D.
	19 15	7 19 20¼	Ditto }				

REMARKS.

1. All the meaſurements of Venus's diameter; and alſo all thoſe of the Sun, which are not ſaid to be horizontal, were taken with the micrometer, in the ſame direction that the laſt preceding diſtance of the limbs of Venus and the Sun was meaſured with.

2. We were obliged to alter the rack-work of the micrometer before we began to meaſure any diſtances of the limbs, &c. in order to make it take in the diameter of Venus, off the ſcale.

3. The heavens at the beginning, and for a conſiderable time both before and after, were frequently obſcured by clouds: but in the intervals, the air was very clear, and the Sun's limbs extreamely well defined.

4. Soon after Venus was half immerged, a bright creſcent, or rim of light, encompaſſed all that part of her circumference which was off the Sun; thereby rendering her whole periphery viſible. This continued very bright until within a few minutes of the internal contact, and then vaniſhed away gradually.

5. We took for the inſtant of the firſt internal contact, the time when the leaſt viſible thread of light appeared behind the ſubſequent limb of Venus: but before that time, Venus's limb ſeemed within that of the Sun, and his limb appeared behind hers in two very obtuſe points, ſeeming as if they would run together in a broad ſtream, like two drops of oil; but which nevertheleſs did not happen, but joined in a very fine thread, at ſome diſtance from the exterior limb of Venus. This appearance was much more conſiderable at the egreſs than at the ingreſs; owing, as we apprehend, to the bad ſtate of the air at that time. We took for the inſtant of internal contact, at the egreſs, the time when the thread of light diſappeared before the preceeding limb of the planet, from which time W. W. took notice that he had told about 24″ when the limbs of the Sun and Venus were apparently in contact: a circumſtance which he did not venture to attend to at the ingreſs.

6. We ſaw nothing like the appearance of an atmoſphere round Venus (unleſs the above-mentioned phænomena may be thought to proceed from thence) either at the beginning, end, or during the time of the tranſit: nor could we ſee any thing of a ſatellite; though we looked for it ſeveral times.

7. It may not be improper to add, that the hazineſs, complained of at the egreſs, was not owing to any accidental bad quality of the air at that time; it is continually ſo here to 10° or 12° above the horizon, and often even to 16° or 18°, in what may be called the cleareſt ſtate of the heavens.

Obſervations

Obſervations for determining the Magnetic Variations at Prince of Wales's Fort on the North-weſt Coaſt of Hudſon's Bay, by W. W.

The variation compaſs, which I received from Mr. Robertſon, by order of the Royal Society, was, when I received it, a very good one, as appeared to me from ſeveral trials which I made of it in London, before it was put on board the ſhip; but when we arrived in Hudſon's Bay, and were ready to make uſe of it, we had the mortification to find that the needle thereof had, by ſome cauſe or other, entirely loſt its magnetic virtue. As the cold was, by the time that we made this diſcovery, much more intenſe than it probably was at the time that Mr. Ellis complains of a ſimilar circumſtance happening to him in thoſe parts, I was naturally led to try whether I could not benefit by his experience, and accordingly removed the compaſs into the room where we lived; which was kept very warm by a large fire, and by the houſe ſtove; and there it remained ever after, but without the leaſt effect.

In order to remedy this misfortune as much as lay in my power, I applied to Captain Richards, as ſoon as he arrived in the river this year; and deſired he would ſend me his azimuth compaſs on ſhore, with which requeſt he very kindly complied the next day; but the cloudy weather prevented me from making any obſervations before the 22d of Auguſt.

The compaſs is of the common form, and I judged that it would be beſt to make the obſervations about noon, when the Sun's azimuths change the faſteſt, and to note the times by the clock; which I did in the following manner:

1769	Times by the clock	Magnetic azimuth	Variation weſt	
	h ′ ″	° ′	° ′	
Auguſt				
☽ 21	23 40 29	1 23 W	10 6	Theſe obſervations were made by Captain Richards; the compaſs having been removed, and the card re-adjuſted after the firſt
	44 48	2 0 W	9 17	
	49 35	3 20 W	9 2	
	52 53	4 30 W	9 6	
☉ 22	0 6 40,1			The Sun tranſited the meridian
	23 18	15 15 W	9 43	By myſelf; the compaſs having been moved, and the card re-adjuſted
	25 22	16 17 W	10 3	
	27 8	16 39 W	9 50	
	23 28 59	2 38 E	9 49	The compaſs placed as it was yeſterday before noon
	31 15	1 50 E	9 52	
	34 5	0 47 E	9 59½	
	42 20	2 0 W	10 3½	The compaſs removed, &c.
	44 10	2 38 W	10 4½	
	45 40	3 12 W	10 7½	
	49 45	4 21 W	9 57	Ditto
	52 44	5 20 W	9 51	
	54 4	5 40 W	9 50	
☌ 23	0 6 38,6			The Sun tranſited the meridian
	12 43	11 25 W	9 24	The compaſs removed, &c.
	25 13	15 28 W	9 18	The compaſs again removed, and the card re-adjuſted
	26 26	16 7 W	9 33	
	28 8	16 30 W	9 22	
	34 38	18 40 W	9 24	Ditto
	36 16	19 22 W	9 33½	
	The mean is		9 41½	

Such

Such are the beſt obſervations of this kind, which I am able to lay before this honourable and learned Society. It gives me much concern to find that they differ ſo widely from one another; more eſpecially as I am certain that I made them with all the care and circumſpection that I was capable of, and with an inſtrument which ſeemed to me good of its kind. But I flatter myſelf it will be conſidered, that, in making obſervations with this inſtrument, there are two unavoidable ſources of error, viz. in adjuſting the card to the line on the ſide of the compaſs-box, and in making the ſhadow of the thread to fall on the line of the index: I may likewiſe add a third error, which may be committed in reading of the vernier, as it only ſubdivides to every 5′; and if all theſe ſhould happen to fall the ſame way, their ſum, I preſume, may be conſiderable (when an inſtrument of ſo ſmall a radius is uſed), in the hands of the moſt ſkilful obſerver.

The Latitude of Prince of Wales's Fort on the North-weſt coaſt of Hudſon's Bay, deduced from Obſervations of circumpolar Stars.

1769 By ζ Urſæ Majoris

Date of the Obſervation. Above the pole	Below the pole	Latitude deduced 90 Arch			96 Arch		
		°	′	″	°	′	″
Jan. 20	Jan. 18	58	47	29½	58	47	53
	20	58	47	27	58	47	51
29	18	58	47	33½	58	47	52
	20	58	47	29	58	47	50
The means of theſe are		58	47	30¼	58	47	51½

1769 By ν Urſæ Majoris

Jan.	20	Jan.	18	58	47	51	58	48	6
			21	58	47	42	58	48	7
			29	58	47	46¾	58	48	2½
			30	58	47	53	58	48	7½
	29		18	58	47	14	58	47	30½
			21	58	47	14¾	58	47	30¾
			29	58	47	9¼	58	47	36¾
			30	58	47	15½	58	47	32½
Means of theſe are				58	47	32	58	47	48

1769 By Capella

Date of the Obſervation Above the pole	Below the pole	Latitude deduced 90 Arch			96 Arch		
		°	′	″	°	′	″
Jan. 29	Jan. 28	58	47	23	58	47	36¾
30		58	47	23½	58	47	31½
31		58	47	24½	58	47	30¾
Febr. 5		58	47	28¼	58	47	39½
8		58	47	34¼	58	47	48½
9		58	47	31¼	58	47	37
Jan. 29	Jan. 29	58	47	30½	58	47	44½
30		58	47	30½	58	47	38¾
31		58	47	31¾	58	47	38
Febr. 5		58	47	34¾	58	47	46¾
8		58	47	41¾	58	47	51¾
9		58	47	40¼	58	47	44¼
Jan. 29	Feb. 10	58	47	22½	58	47	35¾
30		58	47	23	58	47	30½
31		58	47	24	58	47	29¾
Febr. 5		58	47	26¾	58	47	38½
8		58	47	33¾	58	47	43½
9		58	47	32¼	58	47	36
14		58	47	32¾	58	47	32½
Jan. 29	Febr. 13	58	47	21	58	47	35¾
30		58	47	21½	58	47	30½

1769 By Capella continued

Date of the Obſervation		Latitude deduced					
Above the pole	Below the pole	90 Arch			96 Arch		
		°	′	″	°	′	″
Jan. 31	Febr. 13	58	47	22½	58	47	29¾
Febr. 5		58	47	25¼	58	47	38½
8		58	47	32¼	58	47	43½
9		58	47	30¾	58	47	36
14		58	47	31¼	58	47	32½
24		58	47	31¼	58	47	36¾
Means of theſe are		58	47	29	58	47	37½

By α Perſei

Jan. 29	Jan. 29	58	47	23¾	58	47	28½
31		58	47	28¼	58	47	33¼
Febr. 14		58	47	33	58	47	38
Means of theſe are		58	47	28⅓	58	47	33¼

*** Theſe four ſtars paſſed the meridian to the ſouthward of the zenith, when above the pole; which circumſtance rendered them vaſtly convenient for determining the latitude of the place, as the error of the line of collimation of the quadrant is thereby entirely excluded, provided it did not alter in the interval between the obſervations.

1768 By the Pole Star

Date of the Obſervation			Latitude deduced					
Above the pole	Below the pole		90 Arch			96 Arch		
		1769	°	′	″	°	′	″
Decem. 2	January	1	58	47	25½	58	47	37
	Febr.	8	58	47	6	58	47	24½
		24	58	47	6½	58	47	24
3	January	1	58	47	32½	58	47	33
	Febr.	8	58	47	7½	58	47	24½
		24	58	47	8½	58	47	24
15	January	1	58	47	37	58	47	38½
	Febr.	8	58	47	18½	58	47	26
		24	58	47	18	58	47	25½
19	January	1	58	47	25½	58	47	37½
	Febr.	8	58	47	7½	58	47	25
		24	58	47	8½	58	47	24½
1769 Jan. 18	January	1	58	47	25½	58	47	35½
	Febr.	8	58	47	6	58	47	23
		24	58	47	7½	58	47	22½
Means of theſe are			58	47	16	58	47	28⅓

The Latitude of Prince of Wales's Fort deduced from Obſervations of the Sun, and of ſuch ſtars as paſſed ſouth of the zenith.

By the Sun		Latitude deduced					
1768	Declination	90 Arch			96 Arch		
	°	′	″	°	′	″	°	′	″
	N.								
Sept. 20	0	42	9	58	48	19	58	47	57
21	0	18	44½	58	48	26½	58	48	14½
	S.								
22	0	4	40	58	48	15½	58	48	2
30	3	11	59½	58	48	15½	58	48	3
Oct. 1	3	35	19½	58	48	21½	58	48	33
14	8	32	49	58	48	18½	58	48	12
17	9	39	4	58	48	32½	58	48	7½
1769	N.								
June 20	23	28	5½	58	47	38½	58	47	26
22	23	27	40	58	48	10½	58	47	46
Auguſt 2	17	36	18½	58	48	12½	58	48	6½
5	16	48	8½	58	48	16	58	48	7
22	11	33	11	58	48	14	58	47	27½
The means of theſe are				58	48	15	58	48	0

By Capella		L titude deduced					
1768	Declination	90 Arch			96 Arch		
	°	′	″	°	′	″	°	′	″
Oct. 13	45	44	10,3	58	47	34½	58	47	33½
14				58	48	3½	58	47	46½
17				58	47	48	58	47	39½
The means of theſe are				58	47	48½	58	47	39½

By α Perſei

Sept. 29	49	1	9	58	47	47	58	47	53½
Oct. 14	49	1	10	58	47	47	58	47	39½
17				58	47	44	58	47	21½
The means of theſe are				58	47	46	58	47	38¼

1768

By α Lyræ				Latitude deduced					
1768		Declination		90 Arch			96 Arch		
		°	′	″	°	′	″	°	′	″
Oct.	16	38	34	49	58	47	21½	58	47	31½
	17				58	47	24	48	47	35½
The means of these are					58	47	22¾	58	47	33½

By α Aquilæ									
Sept.	29	8	16	22½	58	47	51½	58	47	18½
Oct.	13				58	47	52	58	47	23
	14				58	48	6	58	47	44
	16				58	48	11	58	47	48½
The means of these are					58	48	0	58	47	33½

By α Cygni								
Oct.	2	44	27	48	58	47	21	58	47	0
	13				58	47	26½	58	47	17
	16				58	47	32	58	47	32
	17				58	47	38	58	47	37
The means of these are					58	47	29½	58	47	21½

By α Perſei									
Nov.	16	49	1	11	58	47	50	58	47	20½
	18				58	47	29	58	47	12½
	19				58	48	11	58	48	2
	28				58	48	0	58	47	34
Decem.	10				58	48	14	58	48	2
The means of these are					58	47	57	58	47	38

By Capella					Latitude deduced					
1768		Declination			90 Arch			96 Arch		
		°	′	″	°	′	″	°	′	″
Nov.	16	45	44	10½	58	47	54,2	58	47	29,0
	18				58	47	43,–	58	47	12,2
	28				58	47	26,7	58	47	18,5
	29				58	47	38,9	58	47	32,1
The means of these are					58	47	40,7	58	47	23,–

1769 By β Draconis

June	24	52	28	50	58	47	59	58	47	36
July	20				58	48	14	58	47	55
	21				58	48	13	58	48	5
	22				58	47	58	58	47	45
The means of these are					58	48	6	58	47	50¼

By γ Draconis

June	24	51	31	29½	58	47	37	58	47	29
July	2				58	47	38½	58	47	40
	7				58	47	43	38	47	46½
	18				58	47	50½	58	47	43
	20				58	47	44	58	47	40
	21				58	47	43	58	47	44
	22				58	47	48½	58	47	46
	28				58	47	50	58	47	48
	30				58	47	40½	58	47	39
August	4				58	47	48½	58	47	41
The means of these are					58	47	44½	58	47	41½

The Latitude of Prince of Wales's Fort deduced from Obſervations of Stars on the Northern Meridian.

By α Urſæ Majoris					Latitude deduced					
1768		Polar diſt.			90 Arch			96 Arch		
		°	′	″	°	′	″	°	′	″
Decem.	2	27	0	24	58	47	14	58	47	21
	3				58	47	3	58	47	12
	6				58	46	57	58	47	14
	15				58	47	8	58	47	20
The means of these are					58	47	5½	58	47	16¾

By γ Urſæ Majoris					Latitude deduced					
1768		Polar diſt.			90 Arch			96 Arch		
		°	′	″	°	′	″	°	′	″
Decem.	15	35	1	15	58	46	50	58	47	10
					58	46	58	58	47	8
					58	46	59	58	47	19
The means of these are					58	46	55⅔	58	47	12⅓

By η Urſæ Majoris		Latitude deduced	
1769	Polar diſt.	90 Arch	96 Arch
	° ′ ″	° ′ ″	° ′ ″
January 1	59 31 35	58 47 10	58 47 8
2		58 47 2	58 47 14
The means of theſe are		58 47 6	58 47 11

	° ′ ″	° ′ ″
The means of all the compariſons of ζ Urſæ Majoris	58 47 $30\frac{1}{4}$	58 47 $51\frac{1}{2}$
Ditto of η Urſæ Majoris (conſidered as circumpolar)	58 47 32	58 47 48
Ditto of Capella ditto	58 47 29	58 47 $37\frac{1}{2}$
Ditto of α Perſei ditto	58 47 $28\frac{1}{2}$	58 47 $33\frac{1}{4}$
Ditto of the Pole ſtar	58 47 16	58 47 28
The means of all the circumpolar ſtars are	58 47 27	58 47 $39\frac{3}{4}$
The means of α Urſæ Majoris	58 47 $5\frac{1}{2}$	58 47 $16\frac{3}{4}$
Ditto of γ	58 46 $55\frac{1}{3}$	58 47 $12\frac{1}{3}$
Ditto of η	58 47 6	58 47 11
The means of all the ſtars taken on the northern meridian are	58 47 2,4	58 47 $13\frac{1}{3}$
And the means of the above two are	58 47 $14\frac{3}{4}$	58 47 $26\frac{1}{2}$
The means of all the ſolar obſervations are	58 48 15	58 48 0
Ditto of Capella taken on the ſouthern meridian alone	58 47 $48\frac{1}{2}$	58 47 $39\frac{1}{2}$
Ditto of α Perſei	58 47 46	58 47 $38\frac{1}{4}$
Ditto of α Lyræ	58 47 $22\frac{3}{4}$	58 47 $33\frac{1}{2}$
Ditto of α Aquilæ	58 48 0	58 47 $33\frac{1}{2}$
Ditto of α Cygni	58 47 $29\frac{1}{2}$	58 47 $21\frac{1}{2}$
Ditto of Capella after the line of Collimation altered	58 47 40,7	58 47 23
Ditto of α Perſei ditto	58 47 57	58 47 38
Ditto of β Draconis, the line of collimation having again altered	58 48 6	58 47 $50\frac{1}{4}$
Ditto of γ ———	58 47 $44\frac{1}{2}$	58 47 $41\frac{1}{2}$
The means of all the obſervations taken ſouthward of the zenith are	58 47 49	58 47 38
The means of the circumpolar and northern ſtars	58 47 $14\frac{3}{4}$	58 47 $26\frac{1}{2}$
And, by taking the mean of both, the latitude is North	58 47 32	58 47 $32\frac{1}{4}$

The error of the line of collimation of the quadrant was 23″,6 for the 90 arch, and 19″,7 for the 96 arch, to be ſubtracted from all zenith diſtances, from the beginning of September, 1768, to the latter end of October; from about which time, till towards the latter end of December, it appears to have been 29″,4′ for the 90° arch, and 36″,7 for the 96 arch, to be added to all zenith diſtances taken in that interval. About the latter end of December it altered again, but I had no opportunity of determining its quantity, and ſeemed to be pretty conſtant all the month of January, 1769; but, about the beginning or middle of February, it began again to alter, and continued uncertain until the middle or latter end of June, when it became conſtant again, and ſeemed to me to be, by the obſervations of β and γ Draconis, 21″,6 and 15″,5 to be ſubtracted from the 90 and 96 arches, reſpectively.

W. W.

A TABLE of the EQUATIONS to Equal Altitudes. Lat. 58° 47′½.

Half the Interval between the Observations.

The ☉'s longitude	h ′ II 20	h ′ II 30	h ′ II 40	h ′ II 50	h ′ III 0	h ′ III 10	h ′ II 20	h ′ III 30	h ′ III 40	h ′ III 50	h ′ IV 0	h ′ IV 10	h ′ IV 20	h ′ IV 30	h ′ IV 40	h ′ IV 50	h ′ V 0	h ′ V 10	h ′ V 20	h ′ V 30
0 — 0	26,6	26,8	27,0	27,3	27,6	27,9	28,3	28,7	29,2	29,6	30,1	30,6	31,2	31,8	32,4	33,1	33,8	34,5	35,3	36,2
5	25,9	26,1	26,4	26,7	27,0	27,4	27,8	28,2	28,7	29,1	29,6	30,1	30,7	31,3	31,9	32,6	33,3	34,1	35,0	35,9
10	25,2	25,4	25,7	26,0	26,3	26,7	27,1	27,5	28,0	28,4	28,9	29,5	30,1	30,7	31,3	32,0	32,7	33,5	34,4	35,3
15	24,3	24,5	24,8	25,1	25,4	25,8	26,2	26,6	27,1	27,6	28,1	28,6	29,2	29,8	30,5	31,2	31,9	32,6	33,6	34,5
20	23,2	23,5	23,8	24,1	24,4	24,8	25,2	25,6	26,1	26,6	27,1	27,6	28,2	28,8	29,5	30,2	30,9	31,6	32,6	33,5
25	22,0	22,3	22,6	22,9	23,2	23,6	24,0	24,4	24,8	25,3	25,9	26,4	26,9	27,6	28,3	29,0	29,7	30,4	31,4	32,3
I — 0	20,7	21,0	21,3	21,6	21,9	22,3	22,7	23,1	23,6	24,0	24,5	25,0	25,6	26,2	26,9	27,6	28,4	29,1	30,0	30,9
5	19,3	19,6	19,9	20,2	20,5	20,9	21,3	21,7	22,1	22,6	23,1	23,6	24,1	24,7	25,3	26,0	26,8	27,6	28,4	29,3
10	17,9	18,1	18,4	18,7	19,0	19,3	19,7	20,1	20,5	21,0	21,5	22,0	22,5	23,0	23,6	24,3	25,1	25,8	26,6	27,5
15	16,3	16,5	16,8	17,1	17,4	17,7	18,1	18,4	18,8	19,2	19,7	20,2	20,6	21,2	21,8	22,5	23,2	23,8	24,6	25,4
20	14,7	14,9	15,1	15,4	15,7	16,0	16,3	16,6	17,0	17,4	17,9	18,3	18,7	19,2	19,8	20,4	21,1	21,7	22,4	23,2
25	13,0	13,2	13,4	13,6	13,9	14,1	14,4	14,8	15,2	15,5	15,9	16,2	16,6	17,1	17,7	18,2	18,8	19,4	20,0	20,7
II — 0	11,3	11,4	11,6	11,8	12,0	12,2	12,5	12,8	13,1	13,4	13,8	14,2	14,4	14,9	15,5	15,9	16,4	16,9	17,5	18,1
5	9,5	9,6	9,7	9,9	10,1	10,3	10,5	10,8	11,0	11,3	11,6	11,8	12,1	12,6	13,1	13,4	13,8	14,3	14,8	15,4
10	7,6	7,7	7,8	7,9	8,1	8,3	8,5	8,7	8,9	9,1	9,4	9,5	9,7	10,1	10,6	10,9	11,2	11,6	12,0	12,5
15	5,7	5,8	5,9	6,0	6,1	6,2	6,4	6,6	6,8	6,9	7,1	7,2	7,3	7,6	8,0	8,2	8,5	8,8	9,1	9,4
20	3,8	3,8	3,9	4,0	4,1	4,2	4,3	4,4	4,6	4,6	4,8	4,9	4,9	5,1	5,4	5,5	5,7	5,9	6,1	6,3
25	1,9	1,9	2,0	2 0	2,1	2,1	2,2	2,2	2,3	2,3	2,4	2,5	2,5	2,6	2,7	2,8	2,9	3,0	3,1	3,2
III + 0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
5	1,9	1,9	2,0	2.0	2,1	2,1	2,2	2,2	2,3	2,3	2,4	2,5	2,5	2,6	2,7	2,8	2,9	3,0	3,1	3,2
10	3,8	3,8	3,9	4,0	4,1	4,2	4,3	4,4	4,6	4,6	4,8	4,9	4,9	5,1	5,4	5,5	5,7	5,9	6,1	6,3
15	5,7	5,8	5,9	6,0	6,1	6,3	6,4	6,6	6,8	6,9	7,1	7,2	7,4	7,6	8,0	8,2	8,5	8,8	9,1	9,4
20	7,6	7,7	7,8	7,9	8,1	8,3	8,5	8,7	9,0	9,2	9,4	9,5	9,7	10,1	10,6	10,9	11,2	11,6	12,0	12,5
25	9,4	9,5	9,7	9,8	10,0	10,2	10,5	10,8	11,1	11,3	11,6	11,8	12,0	12,5	13,1	13,4	13,8	14,3	14,8	14,3
IV + 0	11,2	11,3	11,5	11,7	11,9	12,1	12,5	12,8	13,1	13,4	13,7	14,0	14,4	14,9	15,4	15,8	16,3	16,8	17,4	18,0
5	12,9	13,1	13,3	13,5	13,7	14,0	14,4	14,7	15,0	15.4	15,7	16,2	16,6	17,1	17,6	18,1	18,7	19,3	19,9	20,6
10	14,6	14,8	15,0	15,2	15,5	15,8	16,2	16,5	16,9	17,3	17,7	18,2	18,7	19,2	19,7	20,3	20,9	21,6	22,3	23,0
15	16,2	16,4	16,6	16,9	17,2	17,6	18,0	18,3	18,6	19,1	19,5	20,0	20,6	21,1	21,7	22,3	23,0	23,7	24,4	25,2
20	17,7	17,9	18,2	18,5	18,8	19,2	19,6	19,9	20,3	20,8	21,3	21,8	22,4	22,9	23,5	24,2	24,9	25,6	26,4	27,2
25	19,1	19,4	19,7	20,0	20,3	20,7	21,1	21,4	21,8	22,3	22,9	23.4	24,0	24,6	25,2	25 9	26,6	27,3	28,1	29,0
V + 0	20,5	20,8	21,1	21,4	21,7	22,1	22,5	22,9	23,3	23,8	24,3	24,8	25,4	26,1	26,7	27,5	28,1	28,9	29,7	30,6
5	21,7	22,0	22,4	22,7	23,0	23,4	23,8	24,2	24,5	25,1	25,6	26,1	26,7	27,4	28,1	28,8	29,4	30,2	31,1	32,0
10	22,9	23,2	23,5	23,8	24,2	24,5	24,9	25,3	25,8	26,2	26,7	27,2	27.8	28,5	29,3	30,0	30,6	31,4	32,3	33,2
15	24,0	24,2	24,5	24,8	25,2	25,5	25,9	26,3	26,8	27,2	27,7	28,2	28,8	29,5	30,3	31,0	31,6	32,4	33,2	34,1
20	24,9	25,1	25,4	25,7	26,1	26,4	26,8	27,2	27,7	28,1	28,6	29,1	29,7	30,4	31,1	31,8	32,4	33,2	34,0	34,9
25	25,7	25,9	26,1	26,4	26,8	27,1	27,5	2y,9	28,4	28,8	29,3	29,8	30,3	31,0	31,7	32,3	33,0	33,7	34,5	35,4
VI + 0	26,3	26,5	26,7	27,0	27,4	27,7	28,1	28,5	28,9	29,3	29,8	30,3	30,8	31,4	22,1	32,7	33,4	34,1	34,9	35,8
5	26,7	26,9	27,1	27,4	27,8	28,1	28,4	28,8	29,2	29,6	30,1	30,5	31,0	31,6	32,3	32,8	33,5	34,3	35,0	35,8
10	27,0	27,2	27,4	27 7	28,0	28,3	28,6	28,9	29,3	29,7	30,2	30,6	31,1	31,7	32,3	32,8	33,5	34,3	35,0	35,7
15	27,0	27,2	27,4	27,7	28,0	28,3	28,6	28,9	29,2	29,6	30,1	30,5	31,0	31,5	32,0	32,5	33,2	33,9	34,6	35,3
20	26,9	27,1	27,3	27,5	27,8	28,1	28,4	28,6	28,9	29,3	29,8	30,2	30,6	31,0	31,4	32,1	32,8	33,4	34,1	34,7
25	26,6	26,7	26,9	27,1	27,3	27,6	27,9	28,1	28,4	28,8	29,2	29,6	29,9	30,3	30,8	31,4	32,0	32,6	33,2	33,8
VII + 0	26,1	26,1	26,3	26,5	26,7	26,9	27,2	27.4	27,8	28,1	28,4	28,7	29,0	29,4	29,9	30,4	31,0	31,6	32,1	32,7

The inſtruments uſed in making the preceding obſervations were:

1. A clock, made by Mr. Ellicot, with an apparatus for correcting the effects of heat and cold; the ſame which Meſſieurs Maſon and Dixon had to the Cape of Good Hope in the year 1761.

2. An aſtronomical quadrant, made by Mr. Bird, of one foot radius.

3. Two reflecting teleſcopes, of two feet focus, made by Mr. Short; and a divided object-glaſs micrometer, made by the ſame gentleman, of 501,45 inches focal length.

We uſed the micrometer with a magnifying power of 60; the contacts of Venus with the Sun's limb were obſerved with a magnifying power of 120, and all the other obſervations with one of 90.

Both the thermometers, uſed in the preceding obſervations, were according to Fahrenheit's ſcale; and the characters + and —, which are annexed to their altitudes, denote that they ſtood ſo many degrees above or below the cypher reſpectively: where neither of thoſe characters appears, the number is to be underſtood above the cypher.

THE END.